What is claimed is:

1. A method of treating animal manure solids comprising contacting the solids with an effective treatment amount of a treatment composition comprising $AlCl_3 \cdot nH_2O$ or $Al(NO_3)_3 \cdot mH_2O$, or the residue of $AlCl_3 \cdot nH_2O$ or $Al(NO_3)_3 \cdot mH_2O$, to form a treated waste product having an improved environmental, health and/or animal performance property, wherein n is from 0 to 10, and m is from 0 to 12.
2. The method of claim 1 wherein the treatment amount is effective to reduce phosphorus solubility in the manure.
3. The method of claim 1 wherein the treatment amount is effective to reduce phosphorus runoff and/or phosphorus leaching from fields fertilized with manure.
4. The method of claim 1 wherein the treatment amount is effective to inhibit ammonia volatilization from the manure.
5. The method of claim 1 wherein the treatment amount is effective to improve weight gains, feed conversion, and/or disease resistance of animals.
6. The method of claim 1 wherein the treatment amount is effective to flocculate solids in the manure.
7. The method of claim 1 wherein the treatment amount is effective to reduce pathogens in the manure.
8. The method of claim 1 wherein the treatment amount is effective to increase the nitrogen content of the manure.
9. The method of claim 1 wherein the treatment amount is effective to reduce acid rain, atomospheric nitrogen loading and PM-10s associated with the manure.
10. The method of claim 1 wherein the treatment amount is effective to reduce energy use in an animal rearing facility.
11. The method of claim 1 wherein the manure is from poultry.
12. The method of claim 1 wherein the treated waste product comprises from about 0.001 to about 50 parts by weight of $AlCl_3 \cdot nH_2O$ or $Al(NO_3)_3 \cdot mH_2O$, or the residue thereof, and about 50 to about 99.999 parts by weight animal manure solids.

13. The method of claim 1 wherein the treated waste product comprises from about 0.1 to about 20 parts by weight of $AlCl_3 \cdot nH_2O$ or $Al(NO_3)_3 \cdot mH_2O$, or the residue thereof, and about 99.9 to about 80 parts by weight animal manure solids.

14. The method of claim 1 wherein the treatment composition comprises $AlCl_3 \cdot nH_2O$ or the residue of $AlCl_3 \cdot nH_2O$, and n is from about 4 to about 8.

15. The method of claim 1 wherein the treatment composition comprises $Al(NO_3)_3 \cdot mH_2O$ or the residue of $Al(NO_3)_3 \cdot mH_2O$, and m is from about 7 to about 11.

16. The method of Claim 1 wherein the treatment composition comprises aluminum chloride hexahydrate, or the residue thereof.

17. The method of Claim 1 wherein the treatment composition comprises aluminum nitrate nonahydrate, or the residue thereof.

18. The method of claim 1 wherein the treatment composition comprises a liquid including from about 0.05 to about 500 grams of solution residue of $AlCl_3 \cdot nH_2O$ or $Al(NO_3)_3 \cdot mH_2O$ per liter of liquid.

19. The method of Claim 1 wherein the treatment composition comprises a liquid including from about 0.5 to about 100 grams of the solution residue of $AlCl_3 \cdot nH_2O$ or $Al(NO_3)_3 \cdot mH_2O$ per liter of liquid.

20. The method of Claim 1 wherein the treated waste product has a pH of about 7.5 or below.

21. The method of Claim 1 wherein the treated waste product has a pH of about 6.5 or below.

22. The method of Claim 1 wherein the level of soluble phosphorus in the treated waste product is less than the level of soluble phosphorus in the animal manure solids.

23. The method of claim 1 whereby $AlCl_3 \cdot nH_2O$ or $Al(NO_3)_3 \cdot mH_2O$, is added in sufficient quantities to provide a layer of foam.

24. The method of claim 25 whereby the depth of the foam that forms will be from 0.001 to 50 cm.

25. The method of claim 25 wherein the treatment amount is effective to reduce ammonia emissions from manure.

26. The method of claim 1 wherein the treatment amount is effective to reduce odor emissions from manure.

27. The method of claim 1 wherein the treatment amount is effective to reduce transmission of one or more bacteria or pathogen from manure to animals and/or humans.